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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,013	12/21/2001	Alan L. Rowe	112056-0020	1131

24267 7590 11/22/2005
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EXAMINER

PUENTE, EMERSON C

ART UNIT PAPER NUMBER

2113

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/027,013	Applicant(s) ROWE ET AL.	
	Examiner Emerson C. Puente	Art Unit 2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 20, 28 and 34 is/are allowed.
- 6) ☒ Claim(s) 1-19, 21-27, 29-33 and 35 is/are rejected.
- 7) ☒ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

This action is made Non-Final. Applicant's amendment necessitated new grounds of rejection presented in this office action.

Claims 1-35 have been examined. Claim 36 has been cancelled.

Claim Objections

Claim 8 objected to because of the following informalities:

In regards to claim 8, please change "the servers" to "the file servers"(see last line of claim).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5, 6, 8-10, 13-16, 21-24, 29, 30, and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,872,906 of Morita et al. referred hereinafter "Morita".

In regards to claim 5, Morita discloses

identifying all of the disks in the volume (see figure 7 and 8 and column 8 lines 14-36);

obtaining disk characteristics, respectfully, from all of the disks in the volume (see figure 7 and 8 and column 8 lines 14-36);

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comparing the disk characteristics with a set of policies and characteristics of spare disks (see figure 14 and column 11 line 53 to column 12 line 24); and

alerting an administrator if a more optimal configuration is possible. Morita discloses if a notification of a device error such as a hard error or the like which cannot be recovered is received from the disk unit, the spare disk selection section (of the controller) selects a spare disk to replace it (see column 8 lines 37-48), thus indicating optimal configuration.

In regards to claim 6, Morita discloses

reconfiguring the disks into a more optimal configuration. Morita discloses, the spare disk selection section (of the controller) selects a spare disk to replace it (see column 8 lines 37-48), thus indicating reconfiguring the disks into a more optimal configuration.

In regards to claim 8, Morita discloses

one or more switches. Morita discloses switching to a spare to replace a failed disk (see column 1 lines 63 to column 2 line 2). Thus there must be one or more switches to switch between the disks;

a plurality of spare disks operatively interconnected through at least one of the switches (see column 2 lines 33-37);

one or more file servers operatively interconnected to at least one of the switches, each of the file servers including means for allocating one of the plurality of spare disks to any of the servers (see figure 4 and column 6 lines 17-36 and column 8 lines 37-51).

In regards to claim 9, Morita discloses

means for identifying the plurality of spare disks (see column 2 lines 33-46);

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means for selecting a best spare disk from the plurality of spare disks (see column 2 lines 33-46); and

means for claiming ownership of the best spare disk (see column 2 lines 33-46).

In regards to claim 10, Morita discloses

means for selecting a set of disks from the plurality of spare disks that satisfy one or more rules (see figure 14 and column 11 line 53 to column 12 line 23);

means for sorting the set of disks according to a set of ordered policies (see figure 14 and column 11 line 53 to column 12 line 3); and

means for selecting a highest-ranked disk from the set of disks (see column 12 lines 3-7);

In regards to claim 13, 21, 29, and 35, Morita discloses:

a storage adapter to connect a plurality of disk storage units in the network storage system (see figure 4 items 24-1, 26-6 and column 6 lines 17-36).

an operating system to maintain a plurality of volumes, each volume associated with a set of disk storage units, the set of storage units selected from a plurality of disk storage units.

Morita discloses a controller with a disk array control section, indicating a operating system (see column 11 lines 20-25) and further discloses logical device groups, indicating a plurality of volumes, each volume associated with a set of disk storage units, the set of storage units selected from a plurality of disk storage units (see figure 13 and column 11 lines 20-52)

the operating system maintaining a plurality of spare disks selected from the plurality of disk storage units (see column 2 lines 33-46).

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the operating system choosing a best spare disk of the plurality of spare disks to replace a failed disk, the failed disk associated with any volume of the network storage system (see column 2 lines 33-46)

the operating system replacing the failed disk with the best spare disk (see column 2 lines 33-46)

In regards to claim 14 and 22, Morita discloses:

establishing at least one file server in the network storage system and performing the step of choosing a best spare disk by the at least one file server (see figure 4 and column 8 column 37-51).

In regards to claim 15 and 23, Morita discloses:

establishing at least one file server in the network storage system and performing the step of choosing a best spare disk by the at least one file server (see figure 4 and column 8 column 37-51).

In regards to claim 16, 24, and 30, Morita discloses:

determining the best spare disk by selecting those spare disk from the plurality of spare disks which meet at least one selection rule (see figure 14 and column 11 lines 53-60).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-19, 25-27, and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita.

In regards to claims 17, 25, and 31, Morita discloses:

sorting disks in accordance with policies, and assigning a score to each disk as a result of the sorting. Morita discloses setting a priority order value or score for each spare disk relating to each logic device (see figure 14 and column 11 lines 53-67).

Morita further discloses selecting base on the values or scores the best spare disk (column 12 lines 3-10)

However, Morita fails to explicitly disclose associating the highest score with the best choice. "Official Notice" is taken to set values or scores wherein the highest value or score represents the best. It would have been obvious to one of ordinary skill in the art at the time the invention was made to set values or scores wherein the highest value or score represents the best. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses selecting the best spare disk, and setting values or scores wherein the highest value or score represents the best is well known for determining and selecting the best.

In regards to claim 18, 26, and 32, Morita discloses:

determining those disks of the plurality of spare disks which meet at least one selected rule to form a selected pool of disk (see figure 14 and column 11 line 53 to column 12 lines 23);

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sorting disk of the selected pool of disks in accordance with policies, assigning a score to each disk as a result of the sorting. Morita discloses setting a priority order value or score for each spare disk relating to each logic device (see figure 14 and column 11 lines 53-67).

Morita further discloses selecting base on the values or scores the best spare disk (column 12 lines 3-10)

However, Morita fails to explicitly disclose associating the highest score with the best choice. "Official Notice" is taken to set values or scores wherein the highest value or score represents the best. It would have been obvious to one of ordinary skill in the art at the time the invention was made to set values or scores wherein the highest value or score represents the best. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses selecting the best spare disk, and setting values or scores wherein the highest value or score represents the best is a well known for determining and selecting the best.

In regards to claim 19, 27, and 33, Morita discloses a selection process to select the best spare disk in the event that two or more disks appear to be equally the best spare disk. Morita discloses two or more disks can be provided per rank (see column 13 lines 24-25). If there are two per rank, then one has to be selected as the best spare disk.

However, Morita fails to explicitly disclose choosing at random. "Official Notice" is taken for the concept of choosing at random. It would have been obvious to one of ordinary skill in the art at the time the invention was made to choose at random. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses selecting one disk, from the more than one of the one or more disks that are highest-ranked, as the best spare disk, and selecting at random, is well known and used means of selecting.

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Claims 1, 2, 3, 7, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita in view of US Patent No. 6,317,844 of Kleiman referred hereinafter "Kleiman"

In regards to claim 1 and 11, Morita discloses:

identifying a set of spare disks, the set of spare disks attached to the network storage system (see figure 4 and column 2 lines 33-40 and column 6 lines 33-36);

choosing a best spare disk of the set of spare disks the best spare disk (column 2 lines 33-46); and

claiming ownership of the best spare disk (see column 2 lines 33-46);

However, Morita fails to explicitly disclose:

a plurality of filers.

Kleiman disclose a two file server (filer) system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), indicating a plurality of filer.

It would have been obvious for one of ordinary skill in the art at the time of the invention was made to combine the teachings to have a two filer system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), indicating a plurality of filers. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita is concerned with error recovery (see column 1 lines 63) and having a two filer system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), as per teaching of Kleiman, provides error recovery for a failing filer.

In regards to claim 2, Morita discloses

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choosing, in response to a failure of the step of claiming ownership, a next best spare disk of the spare disks available (see column 2 lines 33-46); and

claiming ownership of the next best spare disk (see column 2 lines 33-46);.

In regards to claim 3, Morita discloses

setting a first ownership attribute to a file server-owned state (see figure 7 and 8; column 8 lines 14-36 and column 9 lines 45-50);

setting a second ownership attribute to a file server-owned state (see figure 7 and 8; column 8 lines 14-36 and column 9 lines 45-50);

In regards to claim 7, Morita discloses

selecting one or more disks from the set of spare disks, said set of disks satisfy one or more rules (see figure 14 and column 11 line 53 to column 12 lines 23);

sorting the one or more disks using a set of ordered policies (see figure 14 and column 11 line 53 to column 12 lines 3);

if only one disk is highest-ranked, selecting the one disk that is highest-ranked as the best spare disk(see column 12 lines 3-7); and

if a plurality of disks are highest-ranked, selecting one disks from the plurality of disks that are highest ranks as the best spare disk. Morita discloses two or more disks can be provided per rank (see column 13 lines 24-25). If there are two per rank, then one has to be selected as the best spare disk.

However, Morita fails to explicitly disclose:

a plurality of filers.

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Kleiman disclose a two file server (filer) system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), indicating a plurality of filer.

It would have been obvious for one of ordinary skill in the art at the time of the invention was made to combine the teachings to have a two filer system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), indicating a plurality of filers. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita is concerned with error recovery (see column 1 lines 63) and having a two filer system wherein the system can failover from a first filer to a second filer (see column 2 lines 10-13), as per teaching of Kleiman, provides error recovery for a failing filer.

Claims 4 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morita in view of Kleiman.

In regards to claim 4 and 12, Morita discloses

selecting one or more disks from the set of spare disks that satisfy one or more rules (see figure 14 and column 11 line 53 to column 12 line 23);

sorting the one or more disks selected from the set of spare disks according to a set of ordered policies to identify a highest-ranked disk (see figure 14 and column 11 line 53 to column 12 line 3);

choosing a highest-ranked disk as the best spare disk (see column 12 lines 3-7); and

choosing, in response to more than one of the one or more disks being highest-

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ranked, one disk, from the more than one of the one or more disks that are highest-ranked, as the best spare disk. Morita discloses two or more disks can be provided per rank (see column 13 lines 24-25). If there are two per rank, then one has to be selected as the best spare disk.

However, Morita in view of Kleiman fails to explicitly disclose choosing at random. "Official Notice" is taken for the concept of choosing at random. It would have been obvious to one of ordinary skill in the art at the time the invention was made to choose at random. A person of ordinary skill in the art at the time of the invention would have been motivated because Morita discloses selecting one disk, from the more than one of the one or more disks that are highest-ranked, as the best spare disk, and selecting at random, is well known and used means of selecting.

Allowable Subject Matter

Claims 20, 28, and 34 are allowed for reasons stated in a previous office action.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emerson C. Puente whose telephone number is (571) 272-3652.


The examiner can normally be reached on 8-5 M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert W. Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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